

11/2

Notice of Allowability	Application No.	Applicant(s)	
	10/822,197	TU ET AL.	
	Examiner	Art Unit	
	Toniae M. Thomas	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to the amendment filed on 11 April 2006.
2. ☒ The allowed claim(s) is/are 33-47 and 49-53.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).


* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

- | | |
|---|---|
| <ol style="list-style-type: none"> 1. <input type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) 3. <input type="checkbox"/> Information Disclosure Statements (PTO-1449 or PTO/SB/08),
Paper No./Mail Date _____ 4. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit
of Biological Material | <ol style="list-style-type: none"> 5. <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) 6. <input checked="" type="checkbox"/> Interview Summary (PTO-413),
Paper No./Mail Date <u>05142006;05152006</u> . 7. <input checked="" type="checkbox"/> Examiner's Amendment/Comment 8. <input checked="" type="checkbox"/> Examiner's Statement of Reasons for Allowance 9. <input type="checkbox"/> Other _____ |
|---|---|


Mary Wilczewski
 Primary Examiner

EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.
2. Authorization for this examiner's amendment was given in a telephone interview with Daniel R. McClure on 08 May 2006.

Amendment

3. The application has been amended as follows:

In Claims

Claim 34 has been replaced with the following:

34. A DRAM structure comprising:

trenched capacitors in two trenches through an insulating layer in a memory area, wherein each of said trenched capacitors comprises a bottom electrode lining an opening in said insulating layer, a capacitor dielectric layer disposed on said bottom electrode, and a top electrode disposed on said capacitor dielectric layer wherein an opening remains in said top electrode within one of said two trenches; and a conductive line disposed on said top electrode~~s~~ and filling inside said opening~~s~~ and said trench~~es~~ continuously wherein said conductive line is no higher vertically than said top electrode.

Claim 41 has been replaced with the following:

41. A DRAM structure comprising:

*trenched capacitors in two trenches ~~respectively and continuously in~~
~~contact with said trenched capacitors~~ through an insulating layer in a memory
area; two conductive lines filling said two trenches respectively and continuously
in contact with said trenched capacitors; and a bit line contact in said memory
area through said insulating layer to a bit line wherein said bit line contact lies
between said two trenches; wherein said bit line contact is no higher vertically
than said trench capacitors.*

Reasons for Allowance

4. The following is an examiner's statement of reasons for allowance: the prior art of record does not anticipate or render obvious an embedded DRAM and capacitor structure device substantially as claimed in claim 33, a DRAM structure substantially as claimed in claim 34, a DRAM structure as recited in claim 41, or an embedded DRAM and capacitor structure device as recited in claim 49. More specifically, claim 33 is allowable over the prior art of record because the prior art of record does not anticipate, teach or suggest an embedded DRAM and capacitor structure device substantially as claimed, wherein the device comprises at least: two trenched capacitors in two twisted trenches through an insulating layer in a memory area of an integrated circuit. Claims 34-40 are allowable over the prior art of record because the prior art of record does not anticipate, teach or suggest a DRAM structure substantially as

recited in claim 34, wherein the structure comprises at least: trenched capacitors in two trenches through an insulating layer in a memory area, wherein an opening remains in the top electrode of a capacitor within one of the two trenches; and a conductive line disposed on the top electrode and filling inside the opening and the trench continuously. Claims 41-47 are allowable over the prior art of record because the prior art of record does not anticipate, teach or suggest a DRAM structure substantially as claimed in claim 41, wherein the device comprises at least: trenched capacitors in two trenches through an insulating layer in a memory cell, and two conductive lines filling the two trenches respectively and continuously in contact with the trenched capacitors. Similarly, claims 49-53 are allowable over the prior art of record because the prior art of record does not anticipate, teach or suggest an embedded DRAM and capacitor structure device substantially as claimed in claim 49, wherein the device comprises at least: trenched capacitors in two trenches through an insulating layer in a memory cell, and two conductive lines filling the two trenches respectively and continuously in contact with the trenched capacitors.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."


Art Unit: 2822

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Toniae M. Thomas whose telephone number is (571) 272-1846. The examiner can normally be reached on Monday through Friday from 8:30 a.m. to 5:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra Smith can be reached on (571) 272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TMT
14 May 2006



Mary Wilczewski
Primary Examiner